From: James McKenna
To: Karl Gustavson/DC/USEPA/US@EPA; Chip Humphrey/R10/USEPA/US@EPA
Subject: RE: fish sampling design
Date: 08/25/2011 11:54 AM

Karl, this seems like a reasonable approach to me. I will hold-off asking Anchor or Integral to look into the power analysis. As you stated, we can discuss this further tomorrow. Jim.

-----Original Message-----
From: Gustavson.Karl@epamail.epa.gov [mailto:Gustavson.Karl@epamail.epa.gov]
Sent: Thursday, August 25, 2011 11:49 AM
To: James McKenna; Humphrey.Chip@epamail.epa.gov
Subject: fish sampling design

Jim and Chip,

I wanted to expand on whether we need a power analysis to support sampling. The bottom line here is that I don't think we should pursue that at this time.

A power analysis will need the hypothesis being tested. This will be an important question for LWG and the Agency. Beyond simply evaluating whether collected fish meat risk-based fish tissue objectives (if any) there are several potential hypotheses to test with regard to long-term monitoring for remedial effect and effectiveness:

are post-rem data "different" than the average of pre-rem data;
are post-rem data "different" than the last pre-rem data point;
are post rem data points "different" than expected from the pre-rem trend;

Mixed in, of course, is what does "different" mean in terms of detectable difference and level of significance.

As you can appreciate, it becomes a sticky wicket with high potential to scare folks into inaction, which I think would be a bad outcome for all involved. So, despite my earlier calls for such analyses, I'm moving towards Chip's idea to sample five fish per river mile on each side of the river (22 areas, five fish each = 110 fish). It would be best, if we can afford to analyze these individually. Alternatively, we should analyze 5-fish composites. If we run composites, we should also archive individual fish homogenates for latter analysis of individual fish. This gives us 1) consistency with past efforts, 2) it allows for collection/analysis with the current level of resources, and 3) it allows for latter, more rigorous analysis. The last point is important, because, if individual river miles remain an important "decision unit", then having only one sample per event (even if the one sample is a 5-fish composite) is not very rigorous.

I have spoken with Kevin about how to best proceed and will send out addtl info prior to our call.

Karl

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